

Application of Adhesion Molecules in the Treatment of Ischemic Stroke

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가 (ex- bohydrate)
tracellular matrix)
[1].
(hemos- 가
tasis) (thrombosis) 가
(adhesion molecule)
integrin, immunoglobulin su-
perfamily, selectin, cadherin 가
[2]. Integrin (hetero-
dimer)
(glycoprotein)
[3]. Immunoglobulin
superfamily cadherin
selectin
(endothelium) (car-
fusion injury)
no reflow
[4], (vasoconstrictive mediator)
(proteases)
(oxygen free ra-

.....

134

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dicals)

[5]

가
가

가

가

. Linds-

berg

15

18

가

가 (-

, 15

가 가

[6].

; leukocyte-endothe-lial
interaction)[12-14]. ,

가

가

(rolling), (activation) ,
가 (firm adherence and
transmigration) 3가

(Fig. 1).

selectin, integrin immunoglobulin
superfamily

selectin

Selectin L-selectin
(lymphocyte), E-selectin(endothelium),
P-selectin(platelet and endothelium)
[15](Table 1).(carbohyd-rate
sequence) 가

가

[16].

가 In-terleukin-
1(IL-1) tumor necrosis factor- (TNF-)
cytokine chemoattractant
integrin(CD 18 paired with
CD11a, Cd11b, or CD11c)

occlusion)

(transient occlusion)

가

[8,10].

가

cytokine [11]

가 가

가

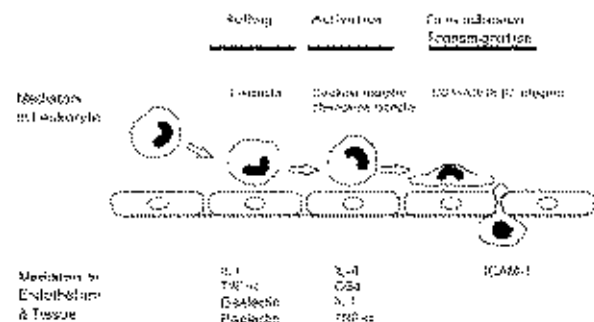


Figure 1. Leukocyte-endothelial interaction.

Table 1. Selectin family

	Location	Expression	Regulation
L-selectin	Leukocyte	Constitutive	
E-selectin	Endothelium	Inducible	TNF- , IL-1, LPS, lymphotoxin
P-selectin	Platelet(-granule) Endothelium(Weibel-Palade bodies)	Migration to plasma membrane	TNF- , IL-1, thrombin, histamine, superoxide

ICAM(intercellular adhesion molecule)
[15,17].

가 가

가

(neutropenia)
가 [18-20], 가 가 [21], [8,18]

(firm adhesion)
ICAM-1 CD11/CD18
(monoclonal antibody)
가 ICAM-1
가 [22]

가 가
CD18, ICAM-1
(apoptosis) (microvessel)
(plugging) [6,22-28].
Chopp
ICAM-1

3 (2
1)
가 [26].

ICAM-1 t-PA
가 ICAM-1 (therapeutic window)
가

[23,29].

가 가
가 가
[30,31].

가 가
가 ICAM-1
(murine monoclonal Ab) enlimomab
6

가
HU23F2G 가 CD11b/CD18
(humanized monoclonal Ab)
12
가

GP b/ a
(adhesion), (activation)
(aggregation) (thrombus)
Integrin
(Table 2).

가
collagen
collagen, adenosine diphosphate(ADP),
thrombin, epinephrine
(Fig. 2).
integrin GP b/ a 가
fibrinogen

Table 2. Integrin receptors involved in the adhesion and aggregation of platelets

Action	Integrin	Ligand
Adhesion	$\alpha_2 \beta_1$ (GPIa/IIa)	collagen
	$\alpha_5 \beta_1$ (GPIc/IIa)	fibronectin
	$\alpha_6 \beta_1$	laminin
	$\alpha_v \beta_3$	fibrinogen
		fibronectin
Aggregation		von Willebrand factor
		vitronectin
	$\alpha_{IIb} \beta_3$ (GPIIb/IIIa)	vitronectin
		fibrinogen
		fibronectin
		von Willebrand factor

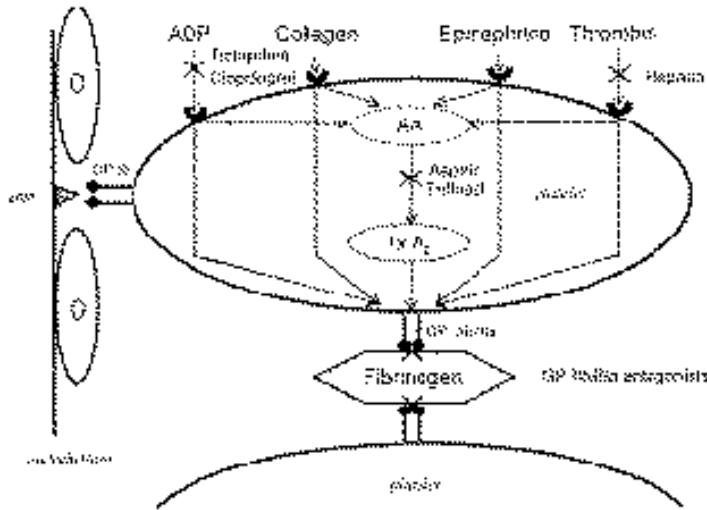


Figure 2. Schematic drawing of activation pathway of platelets. Damage to the endothelium causes von Willebrand factor or collagen to be exposed. Integrin receptors on platelets bind to these proteins. Many agonists such as ADP, collagen, epinephrine, and thrombin activate platelets. This activation increases in number of and changes the conformation of GPIIb/IIIa receptors to bind to fibrinogen. Cross-linking of bound fibrinogen occurs and results in platelet aggregation. X represents the site of inhibition by drugs.

fibrinogen ciximab

[34]. v 3

vascular endothelial growth 가 [35]. VEGF

factor(VEGF) Integrin v 3 (angiogenesis)

aspirin, ti- a v 3 GP b/

clopidine, clopidogrel, dipyridamol, 가

triflusal aspi- 가

rin cyclooxygenase acetylation thro- GP / a

mboxane A2 prostacycline (analogue) abciximab

ticlopidine ticlopidine GP b/ a (angioplasty)

clopidogrel ADP 가 30 35%

(final common (EPIIC)[36].

pathway) GP b/ a 가 , EPILOG[37], CAP-

, GP b/ a가 TURE[38], IMPACT- [39], RESTORE[40]

integrin (percutaneous coronary intervention)

(specific) 가

1983 Coller GP (unstable angina)

b/ a (murine mono- 가 [41-

clonal Ab)가 가 43]. GP b/ a

[32]. c7E3 , 1997 Ohman r-tpA

abciximab(ReoPro) 가 [44].

Abciximab GP b/ a GP b/ a

GP b/ a [33]. r-tpA가 GP b/ a

가 Integrin v 3 가 가

(smooth muscle cell) (C57BL6)

ab- GP b/ a (SDZ

GPI 562) fibrinogen 가, r-tPA
가 가
가 [45]. (squirrel
monkey) GP b/ a (YM337) 가
[46].
Wallace 가 , 가
uro- r-tPA
kinase 3 . 가
abciximab 가
[49]. IST(International Stroke Trial) CAST
(Chinese Acute Stroke Trial) 40,000
48
aspirin
1000
9-10 [47,48]. , r-
가 tPA
GP b/ a
가 가
EPIC
(major bleeding)
가
heparin
EPIC 가
0.1%
[50]. (basement
membrane) 가
r-tPA 가
r-tPA 10
가 [51]. (baboon)
/ GP b/ a
(TP 9201) ,
(del Zoppo ,) ,
[45].
12
abciximab
[52].
GP b/ a
가,

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